

IN THE CLAIMS

1. (Amended) A method of forming an optical component, comprising:
forming a mask over a light transmitting medium so as to protect a region of the light transmitting region where a waveguide is to be formed; and
applying an etching medium to the light transmitting medium so as to form one or more waveguide surfaces [of the waveguide] with a smoothness less than 220 nm, the etching medium including a fluorine containing gas and one or more partial passivants selected from the group consisting of SiF_4 , C_4F_8 , CH_2F_2 and CHF_3 .
2. (Previously presented) The method of claim 1, wherein the fluorine containing gas includes SF_6 and the partial passivant includes CHF_3 .
3. (Previously presented) The method of claim 1, wherein the fluorine containing gas includes SF_6 and the partial passivant includes C_4F_8 .
4. (Previously presented) The method of claim 1, where the etching medium excludes oxygen.
5. (Previously presented) The method of claim 1, wherein the fluorine containing gas is selected from a group consisting of SF_6 , Si_2F_6 and NF_3 .
6. (Amended) The method of claim 1, wherein the partial passivant is selected from a group consisting of [HBr , SiF_4 ,] C_4F_8 [, CH_2F_2] and CHF_3 .
7. (Previously presented) The method of claim 1, wherein the one or more surfaces includes a sidewall of the waveguide.
8. (Previously presented) The method of claim 1, wherein the one or more surfaces include a waveguide facet.

9. (Previously presented) The method of claim 1, wherein the etching medium is applied at a pressure of 1 mTorr to 600 mTorr.
10. (Previously presented) The method of claim 1, wherein the etching medium is applied at a pressure of 1 mTorr to 60 mTorr.
11. (Previously presented) The method of claim 1, wherein the etching medium is applied at a pressure of 10 mTorr to 30 mTorr.
12. (Previously presented) The method of claim 1, wherein the etching medium includes one or more other media.
13. (Previously presented) The method of claim 1, wherein the one or more other media is selected from the group consisting of SiF_4 and SiF_6
14. (Previously presented) The method of claim 1, wherein the one or more other media include a noble gas.
15. (Previously presented) The method of claim 1, wherein the etching medium has a molar ratio of partial passivant to fluorine containing gas of 0.1:1 to 100:1.
16. (Previously presented) The method of claim 1, wherein the etching medium has a molar ratio of partial passivant to fluorine containing gas of .5:1 to 10:1.
17. (Previously presented) The method of claim 1, wherein the etching medium has a molar ratio of partial passivant to fluorine containing gas of 1:1 to 2:1.
18. (Previously presented) The method of claim 1, wherein the mask is formed so as to protect a region of the light transmitting region where a plurality of waveguides are to be formed and the etching medium is applied to as to form one or more surfaces on at least one of the waveguides.

19. (Previously presented) The method of claim 1, wherein the mask is an oxide mask.
20. (Previously presented) The method of claim 1, wherein the mask is a photoresist.
21. (Previously presented) The method of claim 1, wherein the etching medium is applied in an inductively coupled plasma etch.
22. (Amended) A method of forming an optical component, comprising:
obtaining an optical component having a light transmitting medium positioned over a base; and
applying an etching medium to the light transmitting medium so as to form [at least one surface of a waveguide in the light transmitting medium] one or more waveguide surfaces with a smoothness less than 220 nm, the etching medium including [a fluorine containing gas and] one or more partial passivants and a fluorine containing gas selected from a group consisting of Si₂F₆ and NF₃.
23. (Amended) The method of claim 22, wherein the [fluorine containing gas includes SF₆ and] the partial passivant includes CHF₃.
24. (Amended) The method of claim 22, wherein [the fluorine containing gas includes SF₆ and] the partial passivant includes C₄F₈.
25. (Previously presented) The method of claim 22, where the etching medium excludes oxygen.
26. (Amended) The method of claim 22, wherein the fluorine containing gas [is selected from a group consisting of SF₆, CF₄, Si₂F₆ and] includes NF₃.
27. (Previously presented) The method of claim 22, wherein the partial passivant is selected from a group consisting of HBr, SiF₄, C₄F₈, CH₂F₂ and CHF₃.

28. (Previously presented) The method of claim 22, wherein obtaining the optical component includes receiving the optical component from a supplier.

29. (Previously presented) The method of claim 22, wherein the etching medium is applied at a pressure of 1 mTorr to 200 mTorr.

30. (Previously presented) The method of claim 22, wherein the etching medium is applied at a pressure of , 5 mTorr to 60 mTorr.

31. (Previously presented) The method of claim 22, wherein the etching medium includes a second fluorine containing gas selected from the group consisting of SiF_4 and SiF_6 .

32. (Previously presented) The method of claim 22, wherein the etching medium also includes a noble gas.

33. (Previously presented) The method of claim 22, wherein the etching medium has a molar ratio of partial passivant to fluorine containing gas less than 100:1.

34. (Previously presented) The method of claim 22, wherein the etching medium has a molar ratio of partial passivant to fluorine containing gas of about .5:1 to 10:1.

35. (Previously presented) The method of claim 22, wherein the etching medium has a molar ratio of partial passivant to fluorine containing gas of about 1:1 to 2:1.

36. (Previously presented) The method of claim 22, wherein the mask is formed so as to protect a region of the light transmitting region where a plurality of waveguides are to be formed and the etching medium is applied to as to form one or more surfaces on at least one of the waveguides.

37. (Previously presented) The method of claim 22, wherein the etching medium is applied so as to form at least one surface on a plurality of waveguides.

38. (Previously presented) The method of claim 22, wherein the etching medium consists of only SF₆ as the fluorine containing gas, CHF₃ as the partial passivant and Oxygen.

39. (Previously presented) The method of claim 22, wherein the etching medium is applied in an inductively coupled plasma etch.

Please add new claims 40 and 41.

40. (Added) The method of claim 1, wherein the etchant is applied so as to form the one or more waveguide surfaces with a smoothness less than 50 nm.

41. (Added) The method of claim 22, wherein the etchant is applied so as to form the one or more waveguide surfaces with a smoothness less than 50 nm.